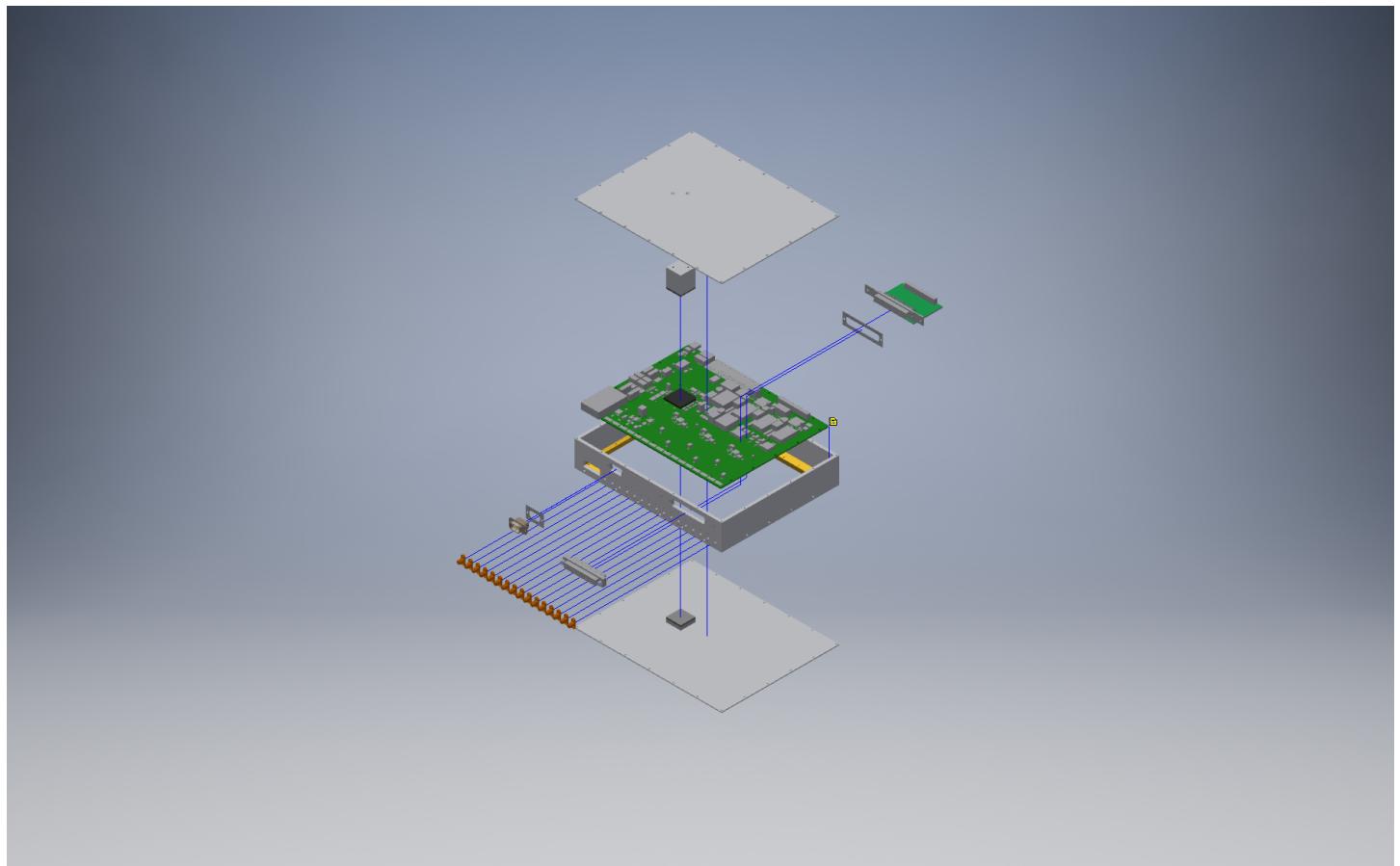


# SNAP Chassis Assembly

Zuhra Abdurashidova | RAL | UC Berkeley

November 3, 2017



Warning: Handling of the SNAP board to follow ESD safe procedures.

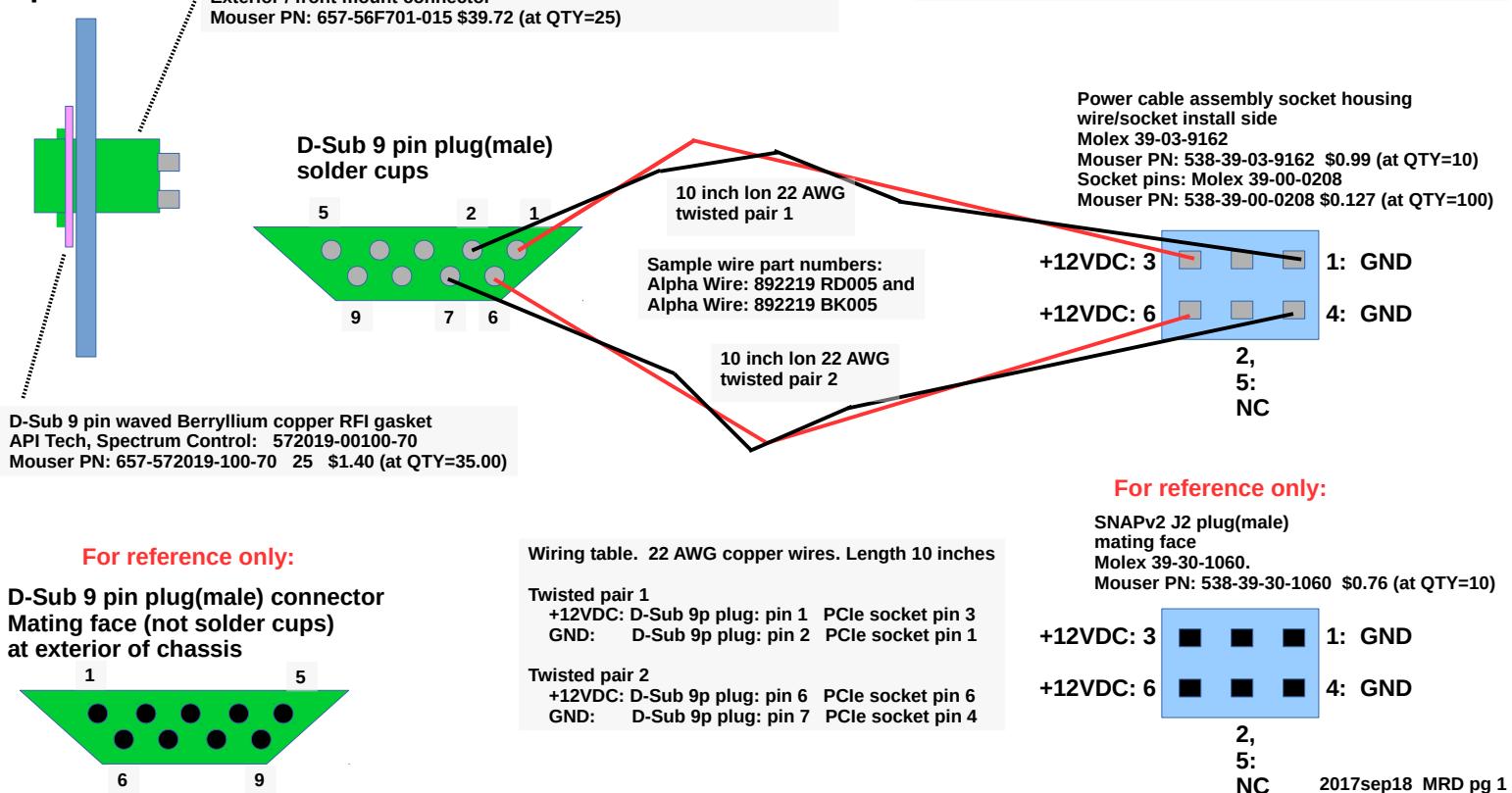
#2 screws to be torqued not higher than 1.4 in-lbs

#4 screws to be torqued not higher than 2.9 in-lbs

# Power Cable Assembly

## SNAPv2 input power cable for HERA applications

### Chassis front panel



# Power Cable Assembly

SNAPv2 input power cable for HERA applications

Bill of materials (non-Amazon.com option):

Item 1: QTY=1	D-Sub 9 pin standard connector, straight, 9 pin, plug(male), solder cup, 4000 pF Pi filtered, 5Amp limit per pin.	API tech : 56F701-015
Item 2: QTY=1	D-Sub 9 pin waved Berryllium copper RFI gasket	API Tech, Spectrum Control: 572019-00100-70
Item 3: QTY=10 inches	Red 22 AWG copper wire with PVC jacket	Alpha Wire: 892219 RD005
Item 4: QTY=10 inches	Black 22 AWG copper wire with PVC jacket	Alpha Wire: 892219 BK005
Item 5: QTY=1	6 pin socket connector housing	Molex 39-03-9162
Item 6: QTY=4	socket connector	Molex 39-00-0208

Bill of materials Amazon.com option:

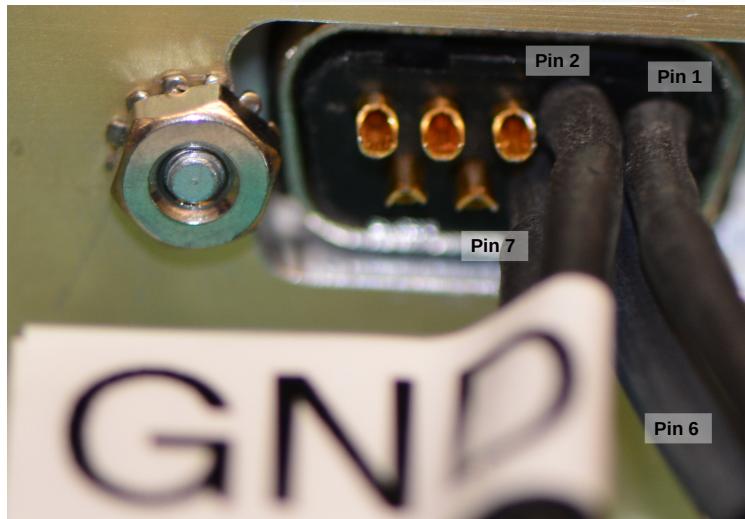
Item 1: QTY=1	D-Sub 9 pin standard connector, straight, 9 pin, plug(male), solder cup, 4000 pF Pi filtered, 5Amp limit per pin.	API tech : 56F701-015
Item 2: QTY=1	D-Sub 9 pin waved Berryllium copper RFI gasket	API Tech, Spectrum Control: 572019-00100-70
Item 3: QTY=1	PCIe cable assembly, 10 inch long	Amazon.com ASIN: B01DV1Z4EQ

# Power Cable Assembly

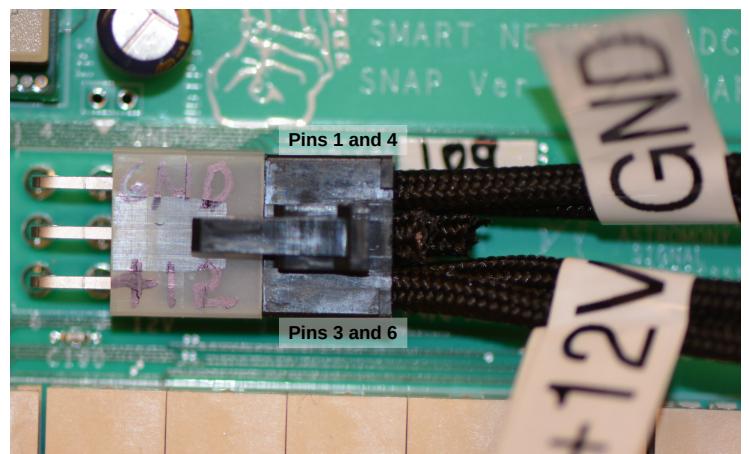
SNAPv2 input power cable for HERA applications

Amazon.com option: ASIN B01DV1Z4EQ  
Cut off all 6 wires at the plug(male) connector.  
Cut off pins 2 and 5 at the socket(female) connector.  
Solder wires to the solder cups as listed in the wiring table shown on page 1 and shown below.

Connections at the externally/face mounted filtered D-Sub 9 pin connector.  
View is from the insides of the chassis.  
Pins 1 and 6 are +12V  
Pins 2 and 7 are GND  
All other pins are Not Connected.



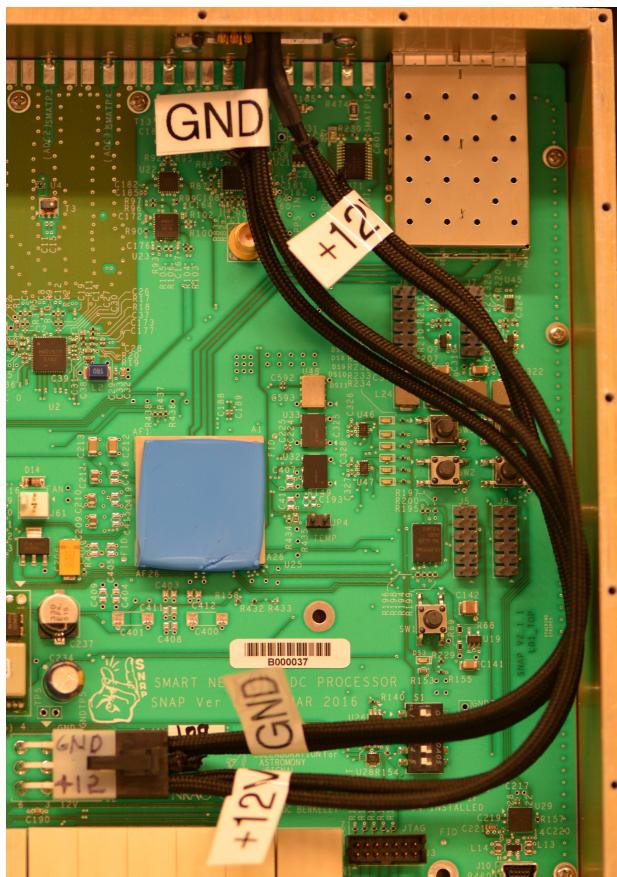
Soldering at the externally mounted filtered D-Sub 9 pin connector.  
Pins 3 and 6 are +12V  
Pins 1 and 4 are GND  
Pins 2 and 5 are Not Connected.



2017sep18 MRD pg 3

## Power Cable Assembly

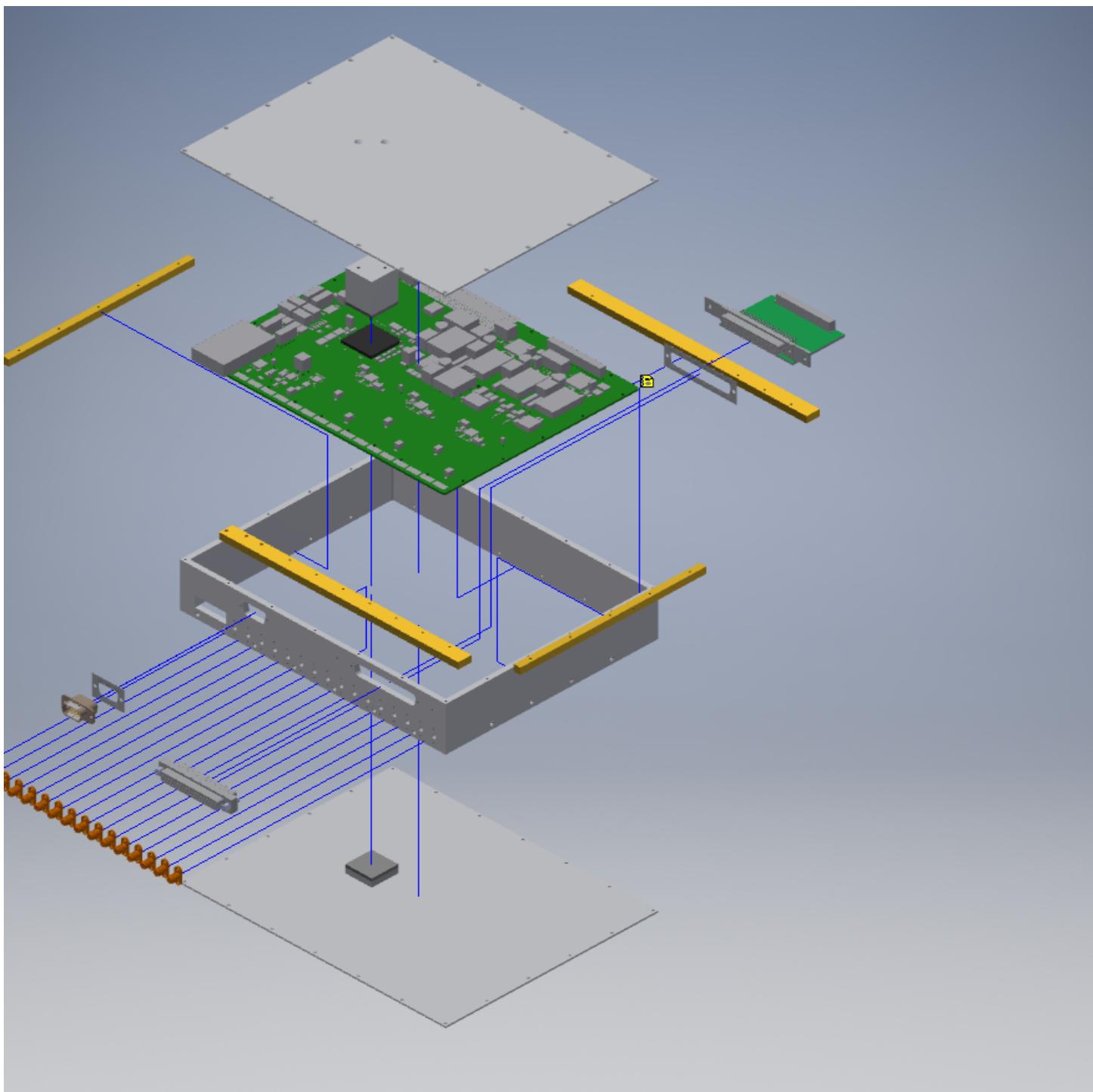
SNAPv2 input power cable for HERA applications



2017sep18 MRD pg 4

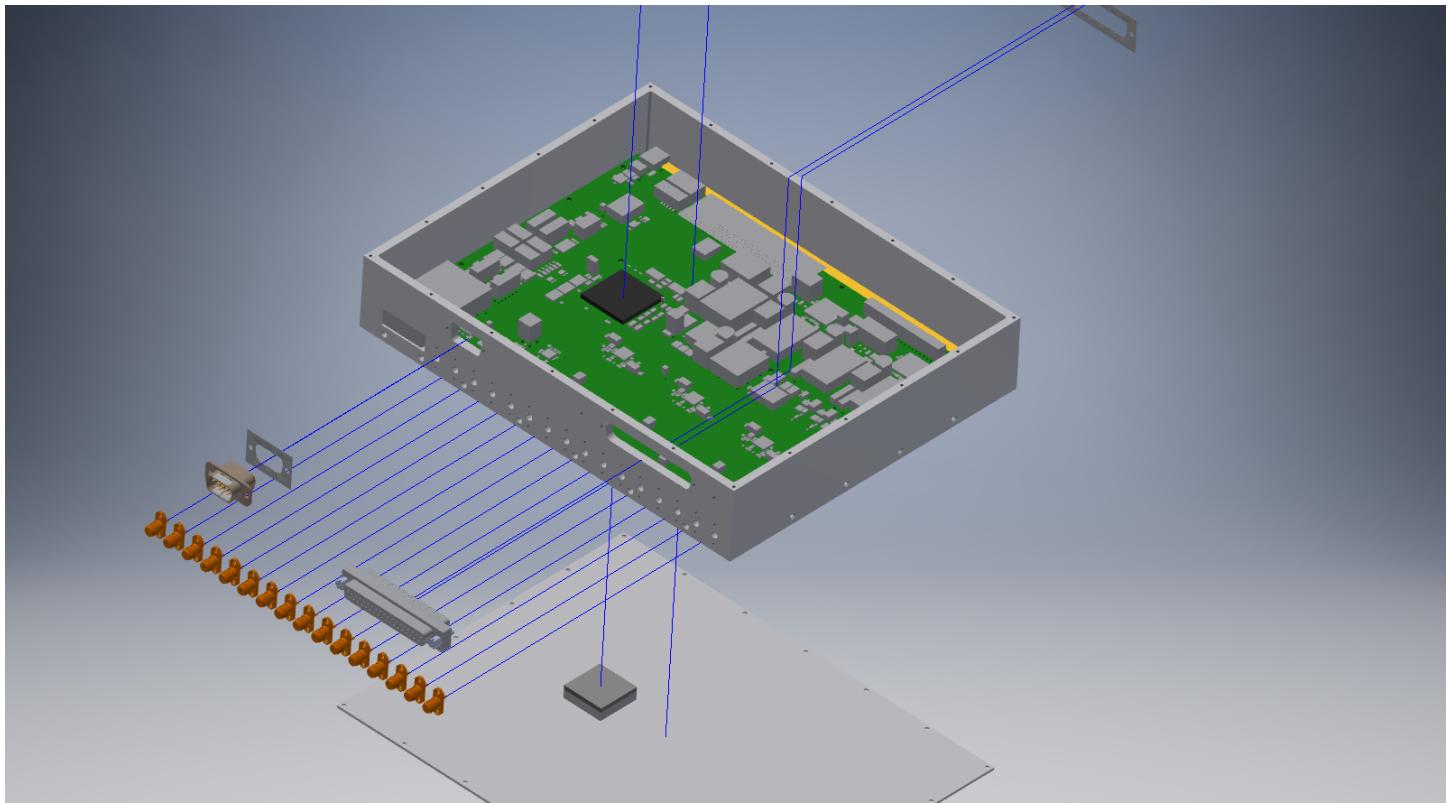
# 1 General Assembly

## 1.1



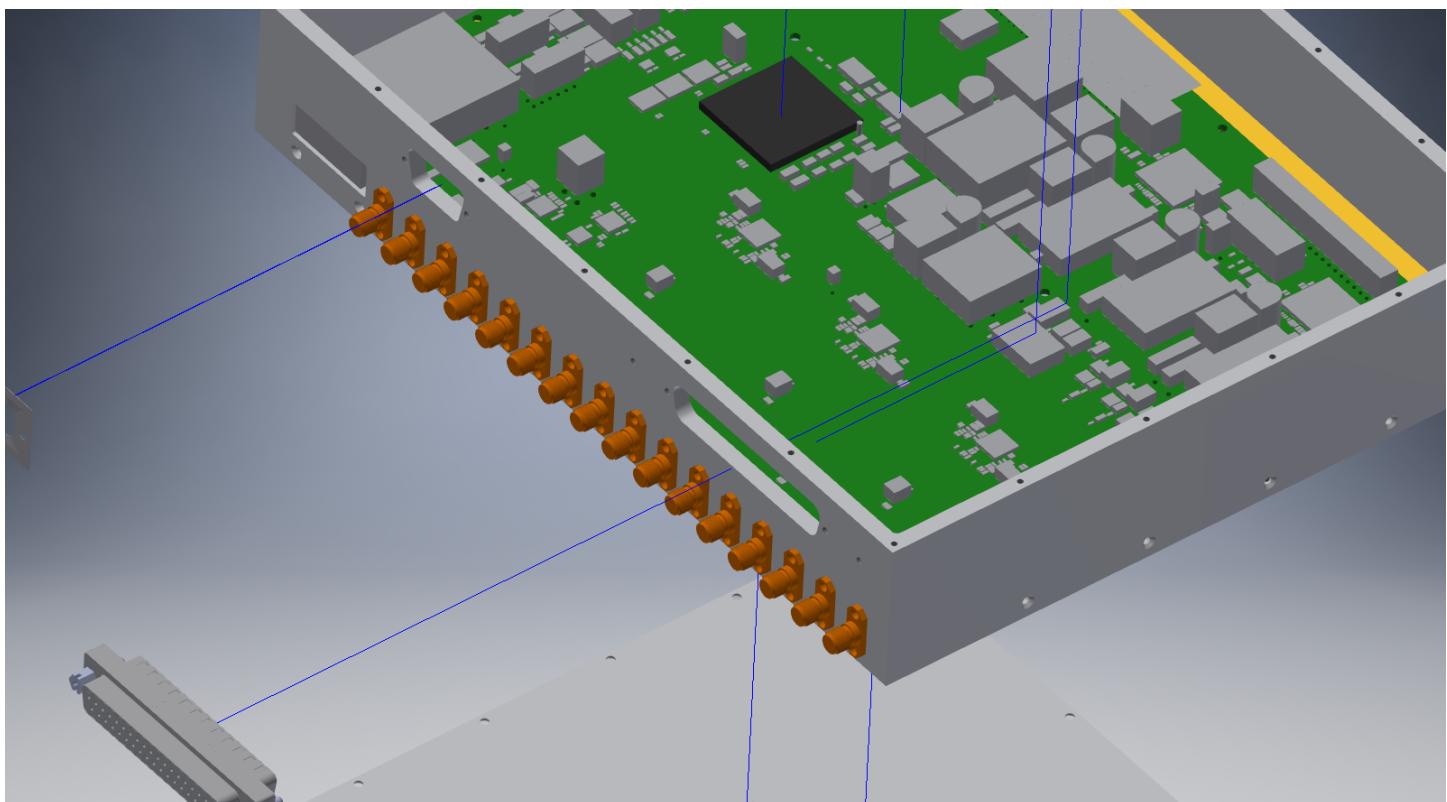
Attach all the rails to the enclosure (BOM #138). Order doesn't matter but I'll start with the front rail (#136 in the BOM). Make sure that the slots are facing up and are aligned to the side with the transceiver cutout on the enclosure. Use #2-56 3/8" screws (BOM #111) to mount all four rails. The screws go on the outside. Orientation is important for the two side rails (BOM #135) since the SNAP board mounts with 5 screws and rails mount to the side of the enclosure with 4. Note that since holes go all the way through the rails, it'll be easier to establish the thread orientation for both SNAP and enclosure attachment screws before installing. The holes were tapped from a specific direction which means that one side of the tapped hole is easier to screw into than the other. The machine shop is supposed to label these for easier assembly. The back rail (BOM #137) orientation is also critical. The side of the rail that has some SNAP mounting holes 'missing' is aligned with the ZDOK+ (BOM #24) side of the SNAP (See the images and the assembly video).

1.2



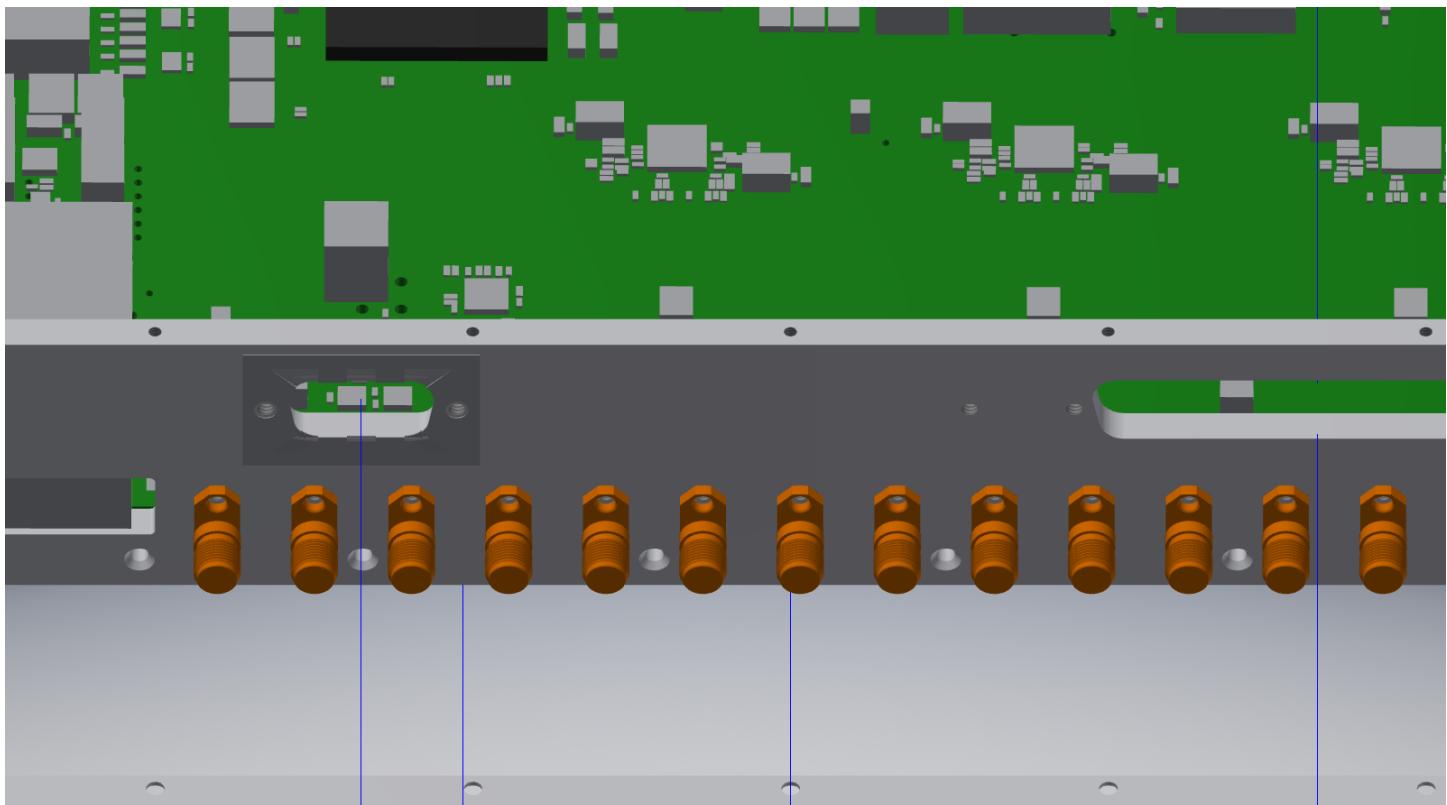
Once the SNAP has passed initial tests, you can mount it to the rails. Use the #2-56 1/4" screws (BOM #113).

1.3



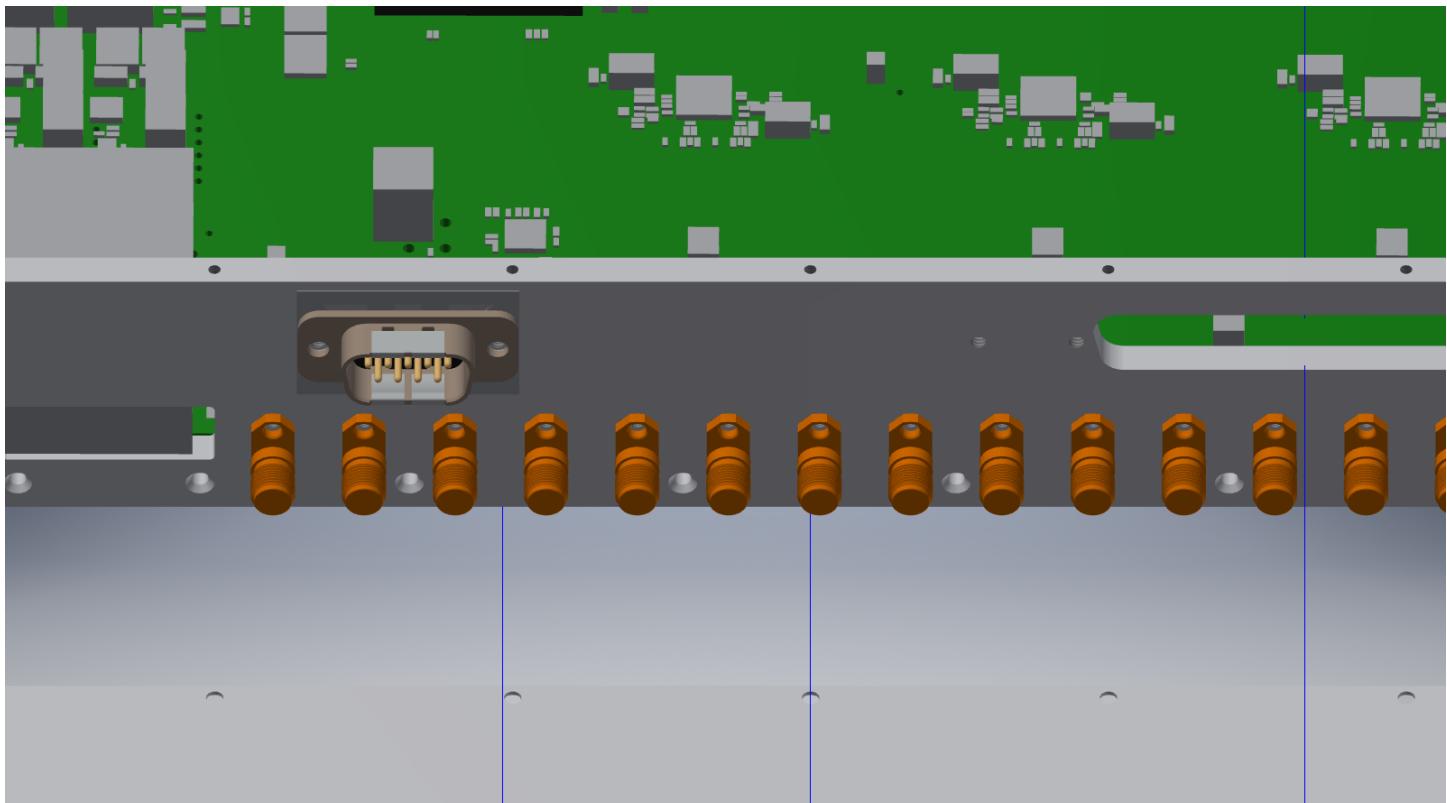
Next mount the SMA connectors (BOM #130) using the #2-56 1/4" screws and #2 external tooth lock washers (BOM #131 and #132, respectively). Solder the center conductor of the SMAs to the board.

**1.4**



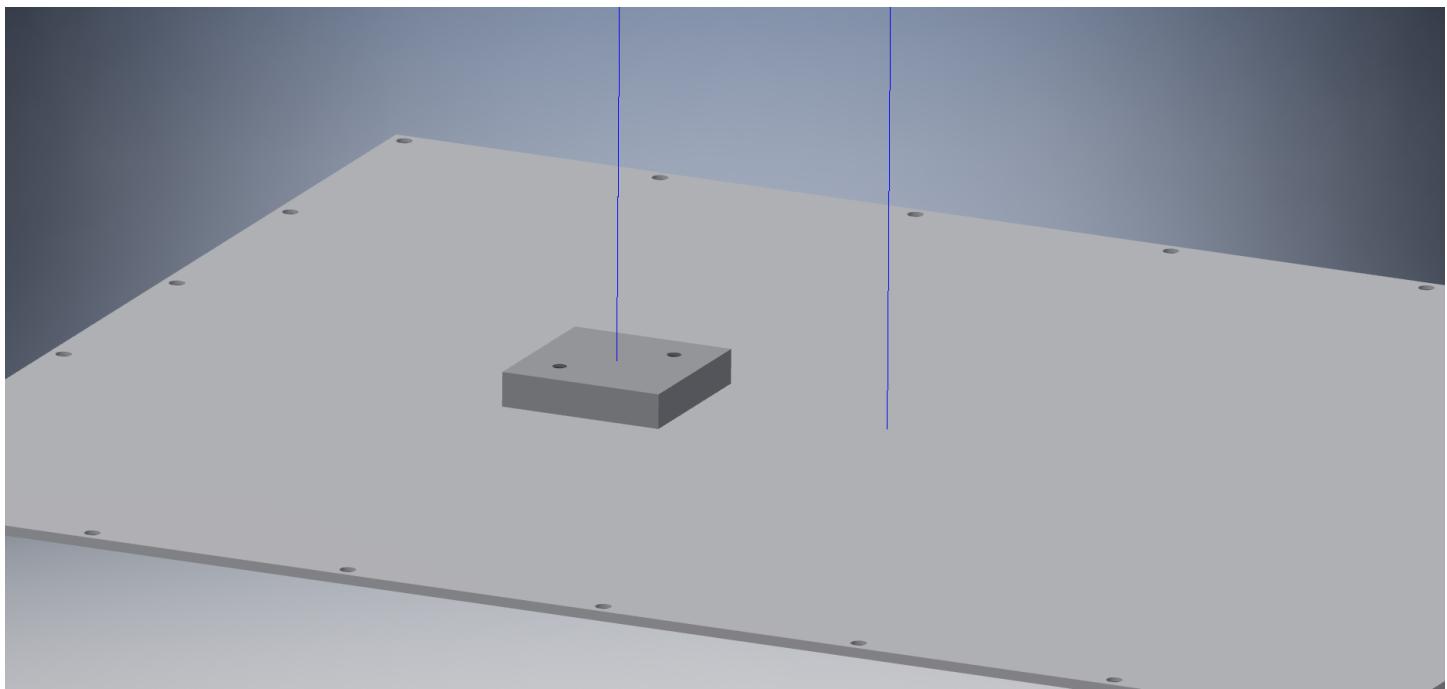
The Dsub9 gasket (BOM #122) goes on the outside of the enclosure and is fixed by the Dsub9 connector (BOM #124).

**1.5**



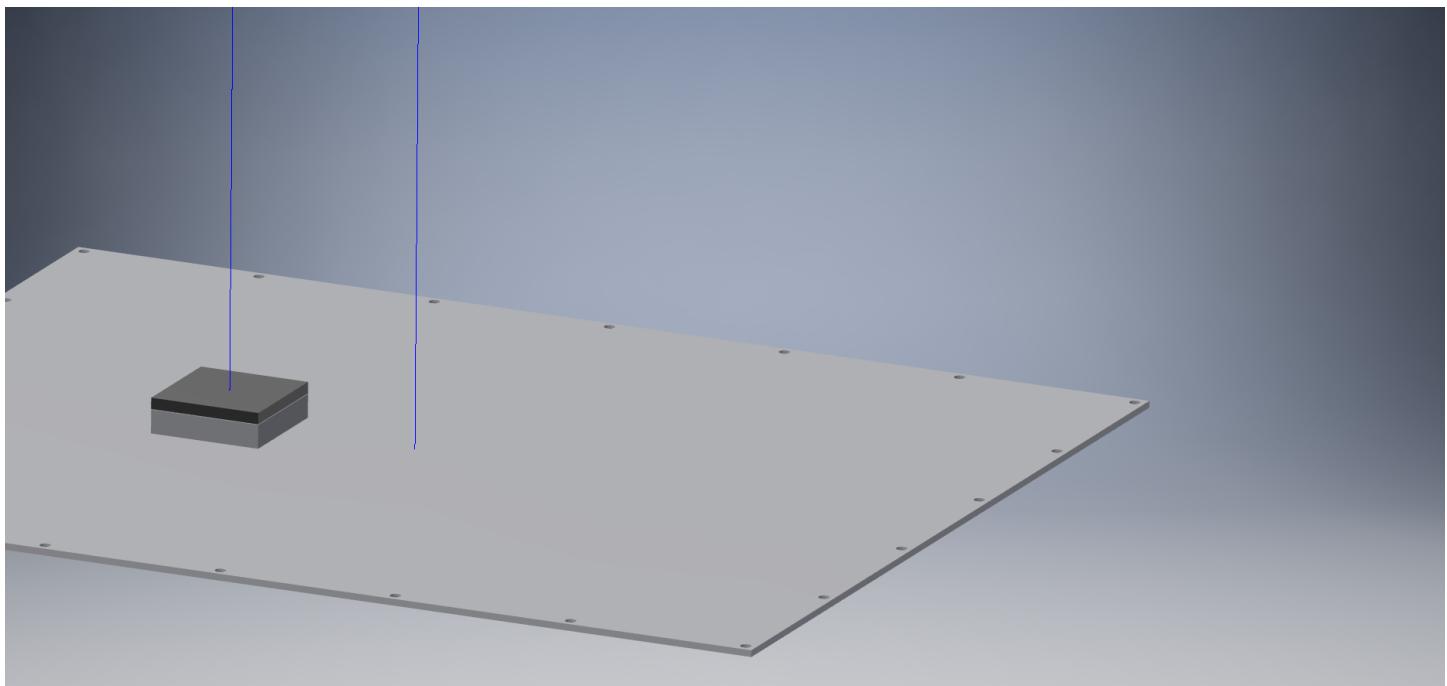
Attach the Dsub9 connector using the #4-40 5/16" jackpost (BOM #121). Place a lock washer between the jackpost and the Dsub9 connector.

**1.6**



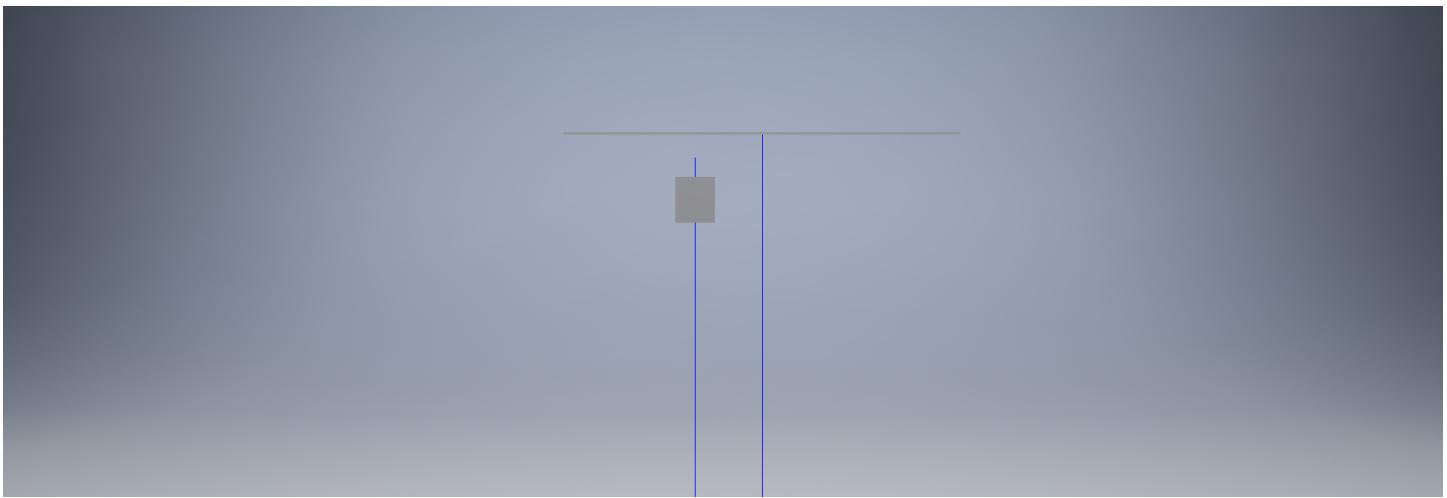
The bottom heat sink (BOM #134) is attached to the bottom enclosure plate (BOM #140) using the #4-40 3/16" screws (BOM #118).

**1.7**



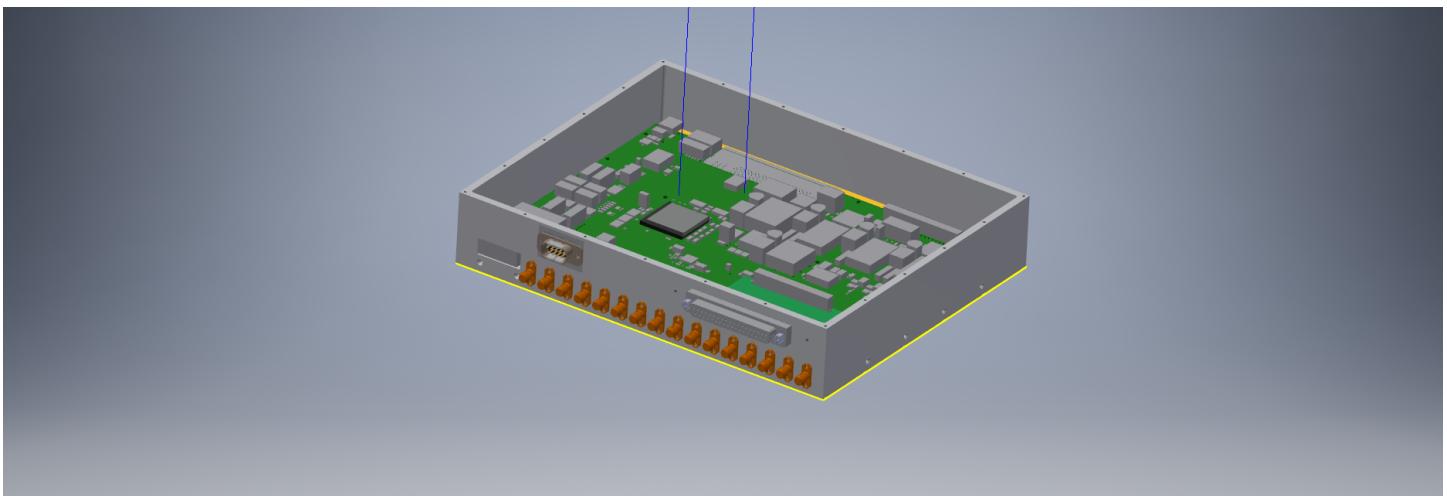
Cut the thermal pad (BOM #129) into a 1x1" square and place it on the attached bottom heat sink. Make sure that the cover is oriented so upon attachment to the enclosure the heat sink aligns with the FPGA chip (BOM ref des U25; it's left of center of the SNAP board when viewing the board from the top and front).

**1.8**



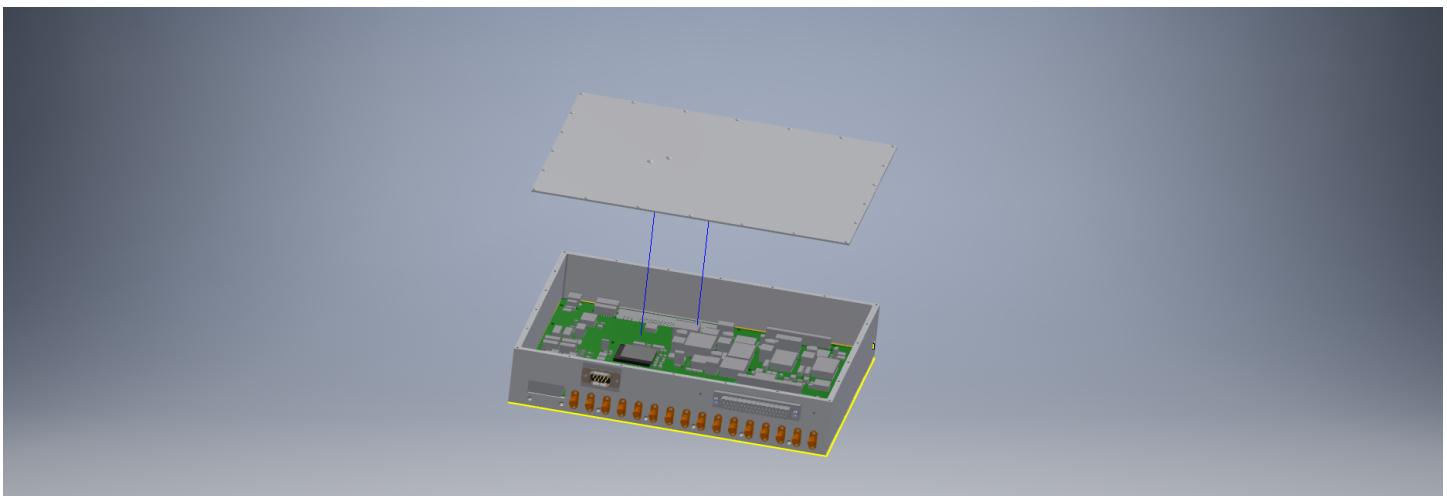
Attach the top heat sink (BOM #141) to the top enclosure cover (BOM #139) using BOM #118 screws - same as the bottom heat sink.

**1.9**



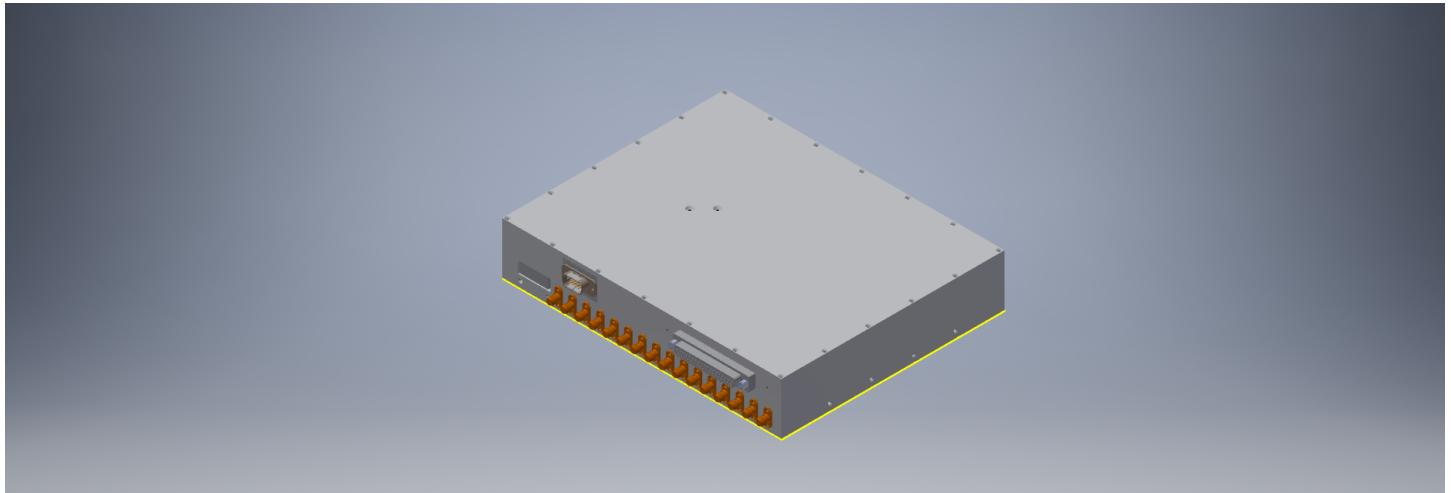
Cut the thermal pad (BOM #129) into a 1x1" square and place it *on the FPGA chip*.

**1.10**



Make sure that the cover with top heat sink is aligned above the FPGA chip.

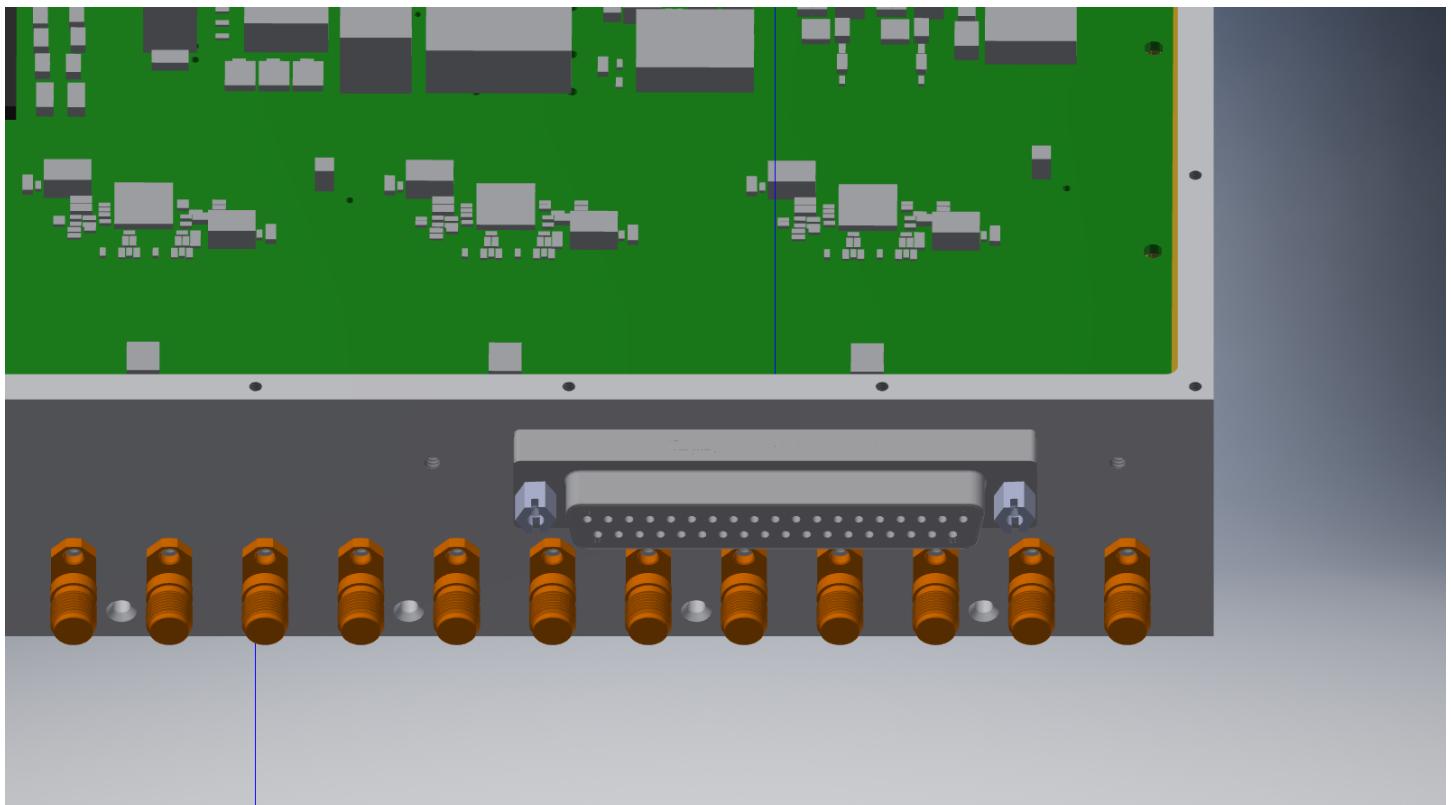
## 1.11



Attach the top cover to the SNAP enclosure using BOM #112.

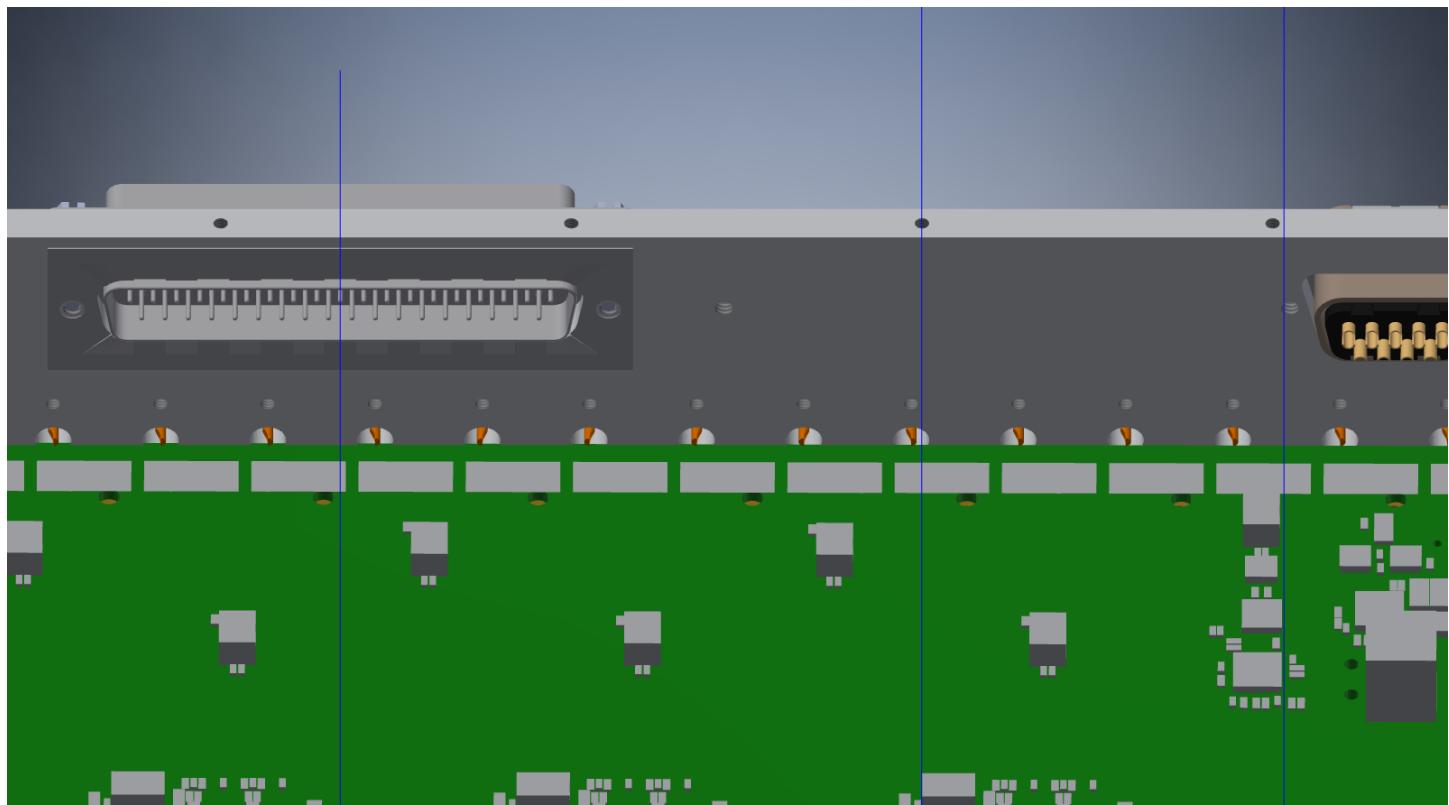
## 2 Optional HERA Mezzanine Card Attachment

### 2.1



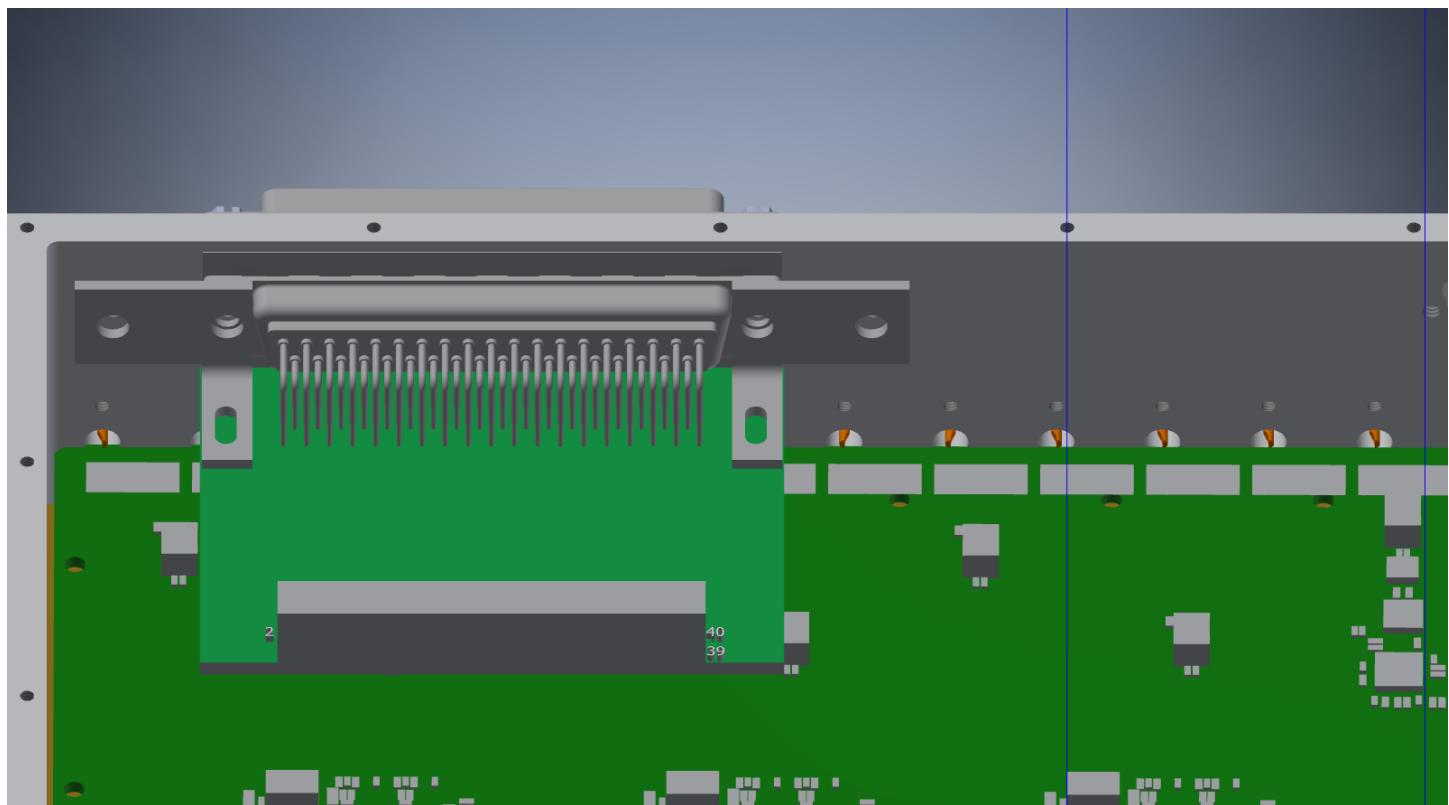
The Dsub37 adapter/filter goes on the outside of the enclosure and is screwed in to the SNAP chassis using its jackposts.

**2.2**



The Dsub37 gasket (BOM #123) is attached from the inside of the enclosure and is held by the mezzanine card.

**2.3**



The Mezzanine card is attached by the #4-40 1/2" and #4-40 1/4" screws (BOM #115 and #116). The 1/2" screw is the ground point and is mounted closer to the side edge of the enclosure.